

First records of the sun moth *Synemon laeta* Walker, 1854 (Lepidoptera: Castniidae) from New South Wales

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Abstract

This article describes the first documented records of the sun moth *Synemon laeta* Walker, 1854 in the Pilliga State Conservation Area in New South Wales. This extends its known distribution by 285 km from the nearest previous record, Bendidee National Park near Goondiwindi, southern inland Queensland. (*The Victorian Naturalist* 132 (2) 2015, 44-48)

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Introduction

The sun moths (family Castniidae) are a group of day-flying moths with a Gondwanan distribution (Common 1990). They have clubbed antennae and brightly coloured hind wings (similar to butterflies), and are often active only during the warmest part of the day (Common 1990; Zborowski and Edwards 2007). There are about 25 named species in Australia, all within the genus *Synemon* Doubleday, 1846, which is endemic to Australia (Common 1990; Edwards 1997). Many species have declined in range since European settlement and are now of conservation concern (O'Dwyer and Attiwill 1999; Douglas 2003; Douglas and Marriott 2003). The sun moth *Synemon laeta* Walker, 1854 (Figs. 1 and 2) has a wide distribution, known from the Cairns/Atherton area in northern Queensland and between Rockhampton and the Gold Coast and inland to Emerald and Goondiwindi in central to southern Queensland (Atlas of Living Australia 2014). It is common around the western parts of the Darling Downs and in Brisbane (ED Edwards, CSIRO, pers. comm. 2014). This contribution documents two sites from the Pilliga forest, in northern inland New South Wales (NSW), where the species has been recently recorded. These records constitute a southerly extension of the known range of the species and the first documented records in NSW.

The 450 000 ha Pilliga forest (30°25'–31°15'S, 148°40'–149°50'E) is located in Gamilaraay Aboriginal Country in the southern part of the Brigalow Belt South bioregion, on the western slopes of the Great Dividing Range in northern



Fig. 1. *Synemon laeta*, Ironbarks Crossing, Pilliga State Conservation Area, Pilliga forest. Photo by MJ Murphy.



Fig. 2. *Synemon laeta* (male), Dog Proof Fence Road, Pilliga State Conservation Area, Pilliga forest. Lodged in Australian National Insect Collection. The lines on the scale bar represent millimetres. Photo by You Ning Su (CSIRO).

inland NSW. The majority of native vegetation on more productive soils in the surrounding area has been cleared for agriculture, with the Pilliga forest left as a large woodland remnant on the poorest sandy soils (Murphy and Shea 2013). The forest comprises a mosaic of woodland and open forest communities with various *Eucalyptus*, *Angophora*, *Corymbia*, *Callitris*, *Allocasuarina* and *Acacia* species and is significant as one of the largest surviving woodland remnants in the Great Dividing Range western slopes bioregions. Pilliga State Conservation Area (SCA) is a 33 386 ha conservation reserve located on the flat outwash plain within the northern Pilliga forest.

Observations

Synemon laeta was recorded at two sites in Pilliga SCA during January/February 2014 (Fig. 3). All observations were made under hot and sunny conditions during a prolonged dry period. Site 1 (30°34.9'S, 149°12.2'E) (Fig. 4) was at Ironbarks Crossing, within 50 m of Cubbo Creek, an ephemeral stream in the Talluba

Creek catchment which was dry at the time of observation. The vegetation at the site was open forest comprising White Cypress Pine *Callitris glaucophylla*, Buloke *Allocasuarina luehmannii* and an unidentified species of Red Gum *Eucalyptus* sp., with a sparse ground cover. The vegetation along the nearby creek was open forest of Rough-barked Apple *Angophora floribunda* and Red Gum. About six *Synemon laeta* were seen at site 1 in the mid afternoon of 1 January 2014, flying around rapidly within about 1 m of the ground, chasing each other and alighting on vertical dry grass stems and sticks. On landing, the moths briefly held the forewings up, exposing the colourful hindwings, before folding them into the 'tent' or 'roof' position in which the hindwings were covered by the forewings (see Fig. 1). Activity was centred on a roadside area of bare ground with sparse dry grass (shown in the foreground of Fig. 4). The sun moths generally flew within about a 15 m radius of this area before returning to settle again within a few metres. Two specimens were collected, of which one was lodged in the Australian Museum (Syd-

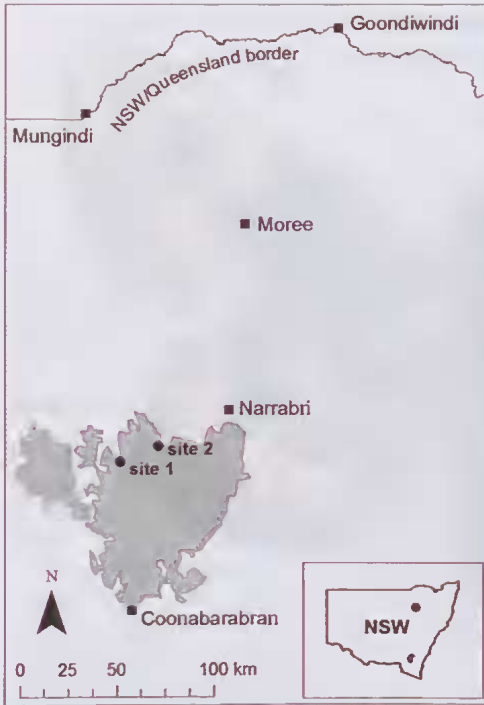


Fig. 3. Location of *Synemon laeta* records in the Pilliga forest, northern inland NSW. The shaded area shows the Pilliga forest.

ney) and the other in the Australian National Insect Collection (ANIC) (Canberra). The site was revisited on 7 February 2014 and two *Synemon laeta* were observed at 1400 h Australian Eastern Daylight Time (AEDT), one of which was photographed (Fig. 1).

Site 2 (30°30.1'S, 149°24.0'E) (Fig. 5) was 21 km ENE of site 1 on Dog Proof Fence Road. The site was a dry ephemeral drainage line in the Coghill Creek catchment with open forest of Red Gum, Rough-barked Apple and Tea Tree *Leptospermum polygalifolium* and a dry tussock ground cover comprising a species of mat rush *Lomandra* sp. About 50 m from the site the vegetation changed to woodland of Narrow-leaved Ironbark *Eucalyptus crebra*, White Cypress Pine and Buloke with a sparse ground cover. A single *Synemon laeta* was observed at 1445 h AEDT on 7 February 2014, fluttering within 1 m of the ground and perching on vertical dry mat rush stems on the roadside. The specimen was collected and lodged in the ANIC (Fig. 2).



Fig. 4. Habitat at site 1 (Ironbarks Crossing). Photo by MJ Murphy.

Discussion

The Pilliga forest records of *Synemon laeta* documented here are located 285 km from the nearest previous record in Bendidee National Park near Goondiwindi, southern inland Queensland (Atlas of Living Australia 2014), and comprise the first documented records of the species from NSW (ED Edwards pers. comm. 2014). The species has previously been recorded less than 10 km from the NSW border in the South Eastern Queensland bioregion (in Lamington National Park and at Burleigh Heads) (Atlas of Living Australia 2014) and may also occur in adjacent areas of the NSW north coast.

The Brigalow Belt South bioregion extends about 500 km north of the NSW/Queensland border, and the occurrence of *S. laeta* in the Pilliga forest is an example of a northerly (Torresian) faunal component in the area. Other examples of this 'northern' fauna in the Pilliga forest include the freshwater crab *Austrothelphusa transversa*, the hyriid mussel *Velesunio*

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